AL-18-802142-2

5 March 1968

Dear Dave:

Subject: Proposal for One (1) [redacted] Precision Enlarger Mod II (Prototype) - Contract [redacted] PAR 250

Submitted herewith is the subject proposal consisting of the technical approach, a tentative schedule covering major phases of effort and an estimated cost breakdown.

The total estimated CPFF price is [redacted] including [redacted] fixed fee.

The price shown in this proposal is based on fabrication of one (1) unit. If, at the time of order placement, we find it possible to combine this order with other similar orders in hand, a voluntary price reduction will be offered based upon the anticipated savings incurred in manufacturing a larger quantity.

This proposal can be considered valid for sixty (60) days from above date.

R. K. W.

RKW:sjm
Enc.

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2: RS w/enc. (AL-18-700456-2 thru 6 & AL-18-802141-2)

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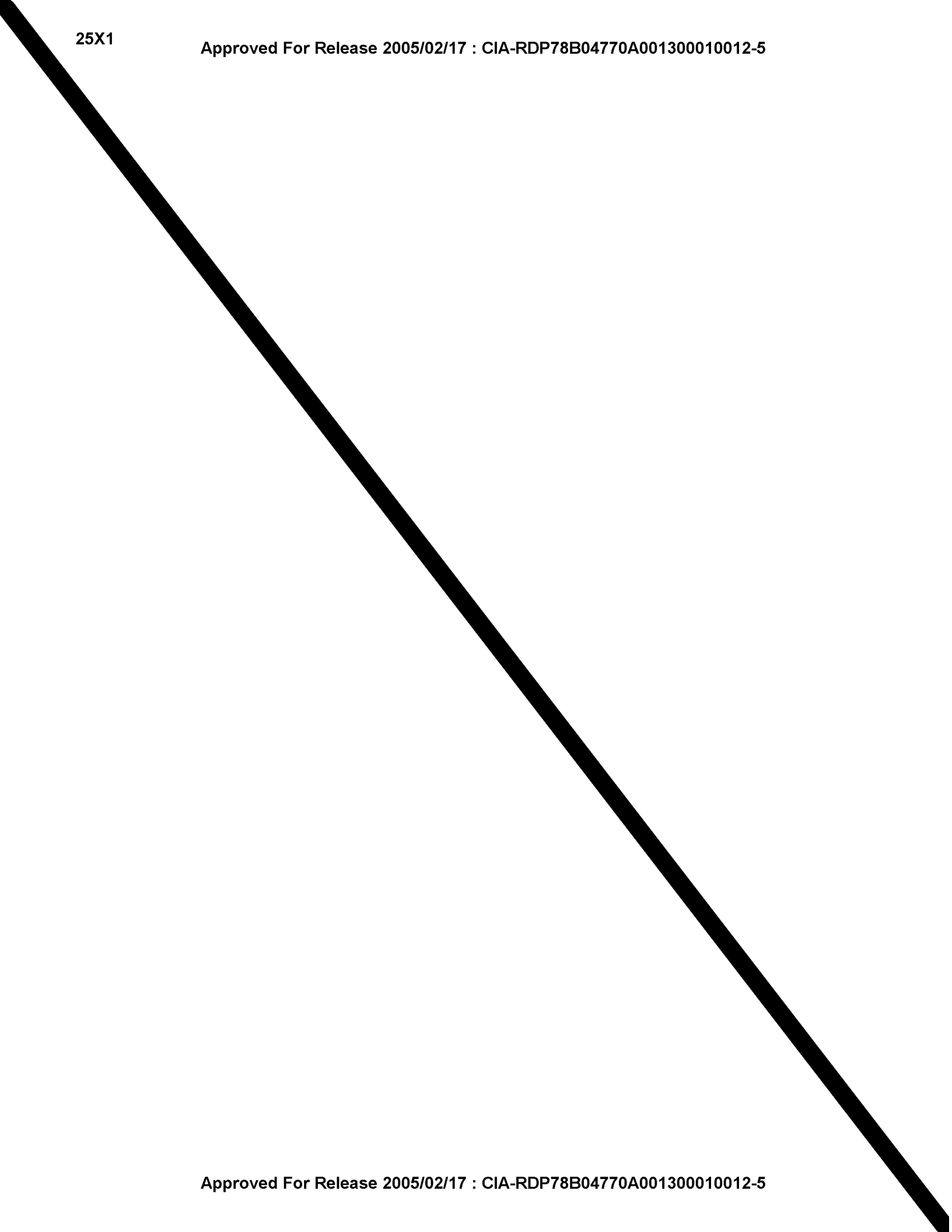

Approved For Release 2005/02/17 : CIA-RDP78B04770A001300010012-5

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(Proposal Section)

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Seven Pages

AL-18-700456-2
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25 Copies.

PAR 250

25X1 [redacted] Precision Enlarger Mod II
(Prototype)

25X1 4/16/68 - [redacted] does not desire to use [redacted] monies for development of a modified BPE. Several other items he would like to try with remaining money. (From Boyd H.) 25X1

14 February 1968

Project Authorization Request

PAR 250
14 Feb 68

25X1

SUBJECT: [redacted] Precision Enlarger Mod II (Prototype)

TASK/PROBLEM

1. Design, fabricate, and test a [redacted] Precision Enlarger, Mod II (Prototype) which will include 4 x 5-inch film chip handling capability, a redesigned easel which will permit any desired orientation of 30 x 40-inch print stock about the optical axis, and certain minor design improvements to increase reliability and decrease maintenance. 25X1

PROPOSAL

2. Introduction: The PAR 243A prototype Briefing Print Enlarger, renamed the [redacted] Precision Enlarger (BPE), has now been in production service for several months. During this time, both the customer and the contractor have recognized the desirability of certain features that could greatly increase the versatility of the BPE.

25X1

3. General Approach: In this project we propose to design, fabricate, and test a prototype enlarger which embodies all the salient features of the prototype BPE delivered under PAR 243A, but which will in addition, possess several new features. It is felt that these new features can be incorporated into the BPE and it is expected that the result will be an extended range of usefulness and greater versatility. It is also anticipated that additional benefits of reduced maintenance and increased reliability will result. The general enlarger configuration and the arrangement of controls will be essentially unchanged. There will be no significant changes in the optical system, its range of magnification or resolution capability. The enlarger will be fitted with six objective lenses and matching condenser sets providing a magnification range of 2.95X to 60X. Optical specification data for these lenses appear in Table I. This is unchanged from the BPE Prototype delivered under PAR 243A.

TABLE I

BPE Specifications for Nominal Magnification, EFL, and f-number and for Minimum Axial Resolution and Field Diameter

Nominal Magnification		Lens		Minimum Axial Resolution		Minimum Field Diameter	
M (Diameter)	OAC (Inches)	EFL (Inches)	f-Number	Negative (1/mm)	Print (1/mm)	Negative (Inches)	Print (Inches)
2.95	57.				27.		10.9
3.77	65.	10.75	f/17.8	80.	21.	3.7	13.9
5.24	80.				15.		19.4
4.75	50.				23.		17.6
6.48	62.	7.17	f/12	113.	17.	3.7	24.0
9.04	80.				12.		33.4
8.46	50.				23.		31.3
11.0	62.	4.85	f/7.8	200.	18.	3.7	40.6
14.7	80.				13.		54.4
14.5	50.				22.		30.5
18.5	62.	3.06	f/5	320	17.	2.10	38.8
24.4	80.				13.		51.1
24.5	50.				16.		30.4
30.8	62.	1.90	f/4.2	400.	13.	1.24	38.2
40.3	80.				10.		50.0
38.5	50.				14.		30.4
48.2	62.	1.24	f/2.8	550	11.	.79	38.1
62.7	80.				9.		49.5

4. Proposed Modifications:

a. Redesign the Vacuum Easel. It is proposed that the vacuum easel be redesigned to permit 360° rotation, about the optical axis, of a 30 x 40-inch sheet of print stock. This feature will make it possible to secure any desired angular orientation of the image on the print format.

b. Redesign the Coordinate Counter Zero Drive Mechanisms. The present timing belt design, while satisfactory from an operational standpoint, has presented some minor problems which appear to stem from its sensitivity to belt tension. It is proposed to redesign this drive primarily to increase its reliability and thereby minimize maintenance.

c. Change the Easel Drive and Vertical Transport Drive Lead Screws To Stainless Steel. The wear characteristic and imposed load factors were not well enough known at the time of the original design to permit sacrificing the wearability of hardened steel. At this time, however, it appears that maintenance to prevent corrosion in high humidity environments might well cause greater difficulty than the very moderate wear rate to be expected with stainless steel leadscrews.

d. Design Modifications to the Filter Wheel Assembly. The original Filter Wheel Assembly drive was designed to permit manual rotation of the wheel with enlarger power off. Due to difficulty with the vulcanizing process used in drive pulley manufacture, this drive was redesigned and utilizes a positive drive type timing belt. Since an automatic rotor brake is an integral part of the drive motor, the positive belt drive from motor shaft to wheel shaft obviates the need for the existing pawl lock. It is proposed, therefore to redesign the drive to eliminate unnecessary mechanism and increase reliability.

e. Incorporate a Corrosion Resistant Finish on Easel and Lens Ramp Rails. It is proposed that experiments be performed to determine what type of finish might be best suited for the high load pressures imposed by rollers acting on these rails. Assuming that such a finish is feasible, it would result in improved appearance and reduced maintenance on the enlarger.

f. Develop and Incorporate into the Enlarger Design the Capability of Handling 4 x 5-inch Cut Film. There has been considerable interest in the capability of handling 4 x 5-inch chips. It is proposed that this capability be developed without interfering with the existing roll negative handling features of the machine.

g. Provide for Declutching the "X" Coordinate Counter Shaft Encoder During High Speed Slewing. If a simple and convenient method of disengaging the coordinate counter can be developed, the result would be greatly increased life for the shaft encoder and its entire drive mechanism.

PROGRAM OBJECTIVE

5. Revise the design of the [redacted] Precision Enlarger as already outlined in Section 4.b. 25X1

6. Make drawings suitable for production use.

7. Fabricate parts and assemble one [redacted] Precision Enlarger Mod II as rapidly as completion of the redesign work permits. 25X1

8. Perform all necessary lens focus calibration operations and test the [redacted] Precision Enlarger Mod II at the contractor's facility. 25X1

9. Make the necessary revisions and provide two copies of an operating manual for the enlarger.

10. Install and check out the enlarger at the customer's facility. The installation schedule and accompanying cost estimate are based on timely preparation, by the customer, of the site and availability of necessary services and personnel. Services include the capability to process cut sheets of photographic film and paper.

11. Provide a final report of the design and fabrication effort following delivery of the enlarger.

SCHEDULE

12. A tentative schedule covering major phases of effort is shown in Figure 1. The time span indicated to complete the subject program is based on actual start of work. Upon approval to proceed and/or start of work, schedule will be reviewed and necessary changes reported as required.

25X1

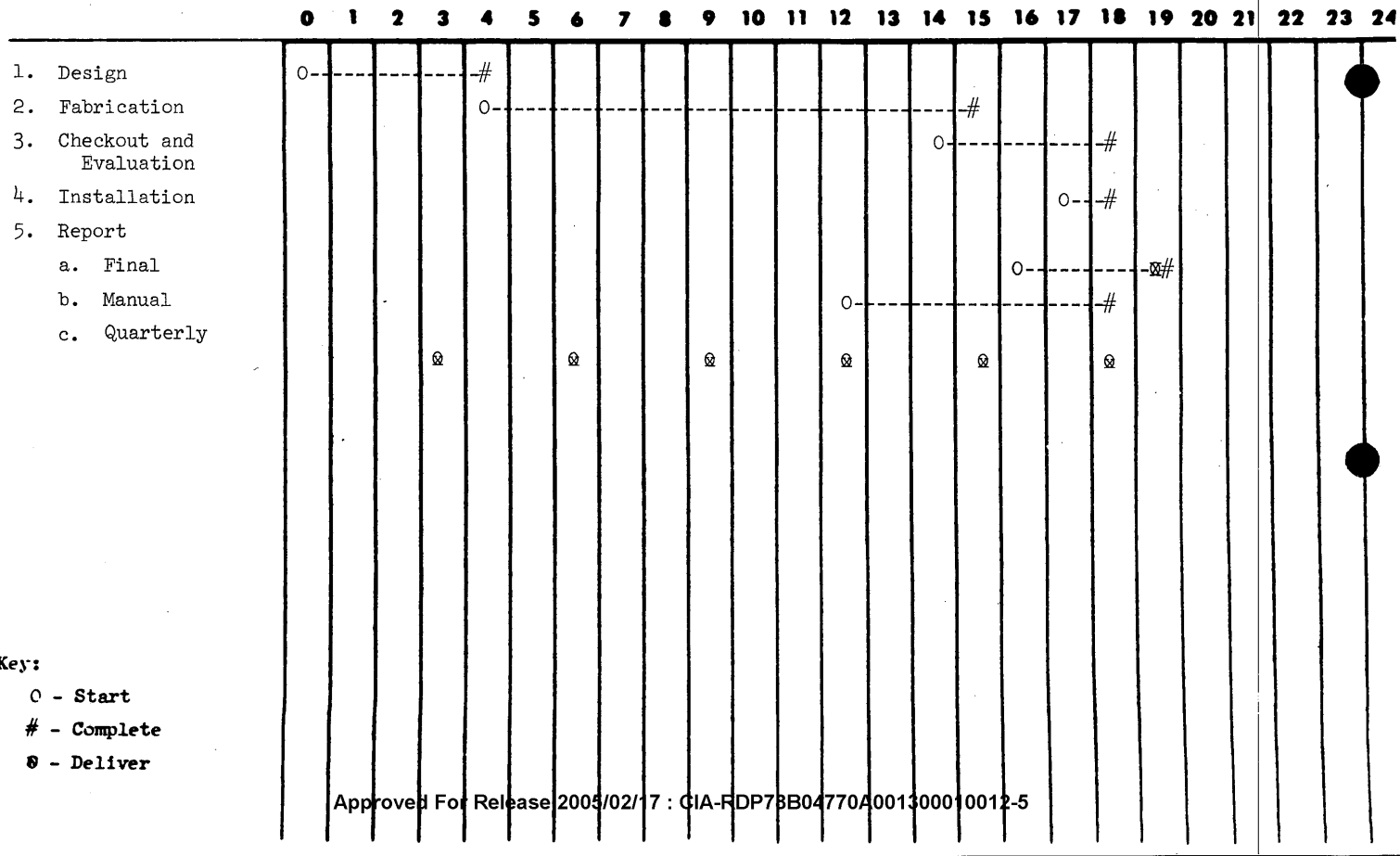
TENTATIVE SCHEDULE

PAR 250

[ ] Precision Enlarger Mod II (Prototype)

14 Feb 68

MONTHS



Key:

0 - Start

 # - Complete

⊠ - Deliver